



Forests

Trees Are a Renewable Resource

What do you think of when you hear the word **forest**? You may have studied about the rainforests of Brazil. Missouri's forests are different. Some of our forests are wet and some are dry. Our forests have many different sizes and kinds of trees, other plants and animals.

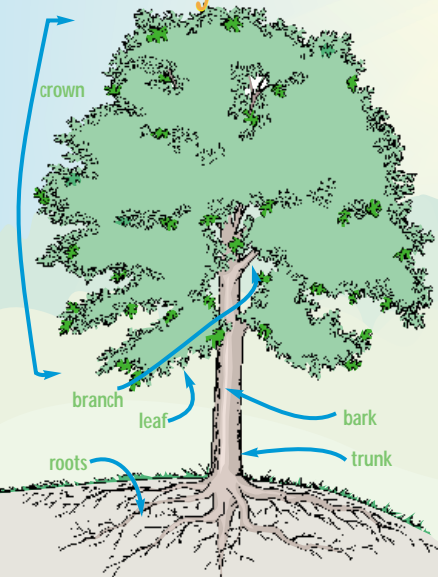
Some of our forests are in cities. They are **urban** forests. They are just as important as those found in the country or **rural** areas.

We do not have tropical rainforests in Missouri. Our forests look and work differently. We have a cooler climate with less rain. We also have four seasons and different types of soils for growing trees. New trees grow back in places where older trees have been cut down.

A **renewable resource** is something that nature can replace. When an old tree is cut down or dies, a new plant can grow in its place. Tropical rainforests do not renew as easily as Missouri's forests. Our trees are a renewable resource. How do you think Missouri's forests have changed?



Healthy Trees Make Healthy Forests



Trees are amazing plants. They live, grow and reproduce without moving to find food or water. From roots to leaves, each part of a tree plays an important role in helping it grow and survive.

No one has ever seen an entire tree. That's because more than half of the tree is found below ground. The **roots** spread out almost twice as far as the tree is tall. Roots grow as they search for air, water and minerals. The **trunk** supports the **branches** and carries water and nutrients to and from the **leaves**. It is covered with **bark**. The bark protects the tree from injury and insects.

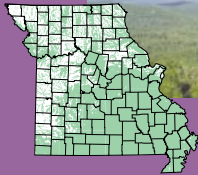


Great-horned owl

Branches and leaves make up the tree's **crown**. They make food with energy from sunlight, carbon dioxide, water and minerals. The **roots** absorb minerals for the tree to use. The process of using the sun's energy to make food is called **photosynthesis**.

Trees are **producers** because they use the sunlight to make food.

FORESTS
IN 1800



History and TALL TREES

What did Missouri look like many years ago? Our forests have changed a lot over the last 200 years. Forest history shows us how people have used forests. We have learned how to care for our forests.

Missouri's first explorers found large areas of forests. These forests were very important for the settlers. They hunted for food in the forest and used the trees to make what they needed. Houses, tools, boats, wagons and so much more were made from trees. The people thought that the forest was so large it would never end.

More than 15,000 years ago, the first people came to Missouri's forests hunting for food.

1541 DeSoto explored the Ozarks, claiming it for Spain.
1673 French explorers Marquette and Joliet traveled the Mississippi River—more than 2,500 miles in a birchbark canoe. They saw the "most beautiful prairies and woods."



1804 Lewis and Clark depart on the Missouri River and write, "The country is beautiful and in the river, rich and well timbered."



1840-1880 Missouri settlers move into areas with forests for wood to build homes. Trees were cleared for farming and wood was used for fuel.



EARLY PEOPLES

1500-1800

1800-1840

1840-1880



Forests are great places to hike and study nature.

Forests are more than trees. Forests are communities of trees, other plants, animals and soil. All of these depend on one another. Forests are an important part of the earth's environment. They hold water and soil in place, help reduce energy costs in our homes and return nutrients to the soil. Forests give us many things including fuel, lumber, paper and food. We also use our forests for hiking, camping, hunting and nature study.

Forests are home to many kinds of wildlife. Each animal has different needs. Some, such as deer, like young forests for food. Others, such as raccoons and bobcats, like big trees for dens. Woodpeckers and flying squirrels like to nest in hollow trees. Snakes and lizards use rotting logs.

Careful **harvesting** of trees for wood is good for the forest. Harvesting can create many different **habitats** for wildlife. How do you think early settlers used our forests?

Many people moved here to live after Missouri became a state. More trees were cut. Wood was very important for building things. Some forests were cut to make room for homes and farms. People often cut trees with little thought or care for the land and the future. Cutting trees helped people live, but they cut too much. Most of the state's forests were all cut by the 1920s.

Since then we have learned that trees are not an unlimited resource. Forests are a renewable resource. We now manage forests without cutting all the trees at once. We know forests need time to grow back so we will have wood products. Learning about forest **conservation** will help us use trees wisely in the future. Conservation is to use natural resources so they will be available many years from now.

1901 President Theodore Roosevelt made conservation important in the U.S. He created many national parks.

1909 The peak of Missouri's lumber production.

1910 Nearly all of the pine forests in the Ozarks were cut.



1944 Smokey Bear is rescued. He becomes a symbol for fire prevention.



1960s Urban forestry becomes important in Missouri.

1989 Forests cover 14 million acres of the state.



2000 Missouri celebrates 100 years of forest conservation.

Moving Along

SOWING TREE SEEDS

All trees reproduce by making seeds. Seeds sprout and grow into the same kind of tree from which they came. Baby trees are **seedlings**. They need water, good soil and enough light to help them grow.

Seeds that fall straight down will grow in the parent tree's shade. To get more light, seeds need to move away from parent trees. Seeds can move in several ways. All seeds are found inside **fruits**. Nuts and berries are fruits because they contain tree seeds. Here are some examples of how seeds move.

THE FLYERS

Do any of these seeds look like they could fly away from the tree?

THE FLOATERS

Which seeds look like they could float on water?

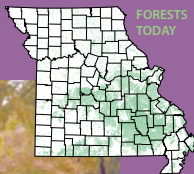
THE PLANTERS

How many of the seeds would be buried by squirrels or other animals for winter food?

THE POOPERS

Which of these seeds would you want to eat right now?

See how many tree seeds you can find the next time you're in a forest or your backyard.



FORESTS TODAY



1880-1920

1920-1960

1960-2000





David
Besenger

CIRCLE OF SEASONS

SPRING

Trees begin to leaf out.

Birds are singing and building nests.

Seeds sprout.

Flowering dogwoods and hawthorns bloom.

Turkeys are nesting.

SUMMER

Caterpillars are busy eating and birds are busy eating caterpillars.

Trees use gallons of water daily.

Trees provide cool shade on hot days.

Deer fawns are born.

WINTER

Identify trees by twigs, buds and shapes.

Baby squirrels are born in nests.

Great-horned owls call at dusk—WHOO-WHOO—who-who.

FALL

Leaves turn colors and fall. Animals gather nuts for winter.

Time to pick up nuts, persimmons and pawpaws.

People cut firewood for winter.

Woody Words

r e n e w a b l e r e s o u r c e
e r w a l i k o x f u d l r l l p
p u o t b r a n c h e s m b s i h
e r r n x g n i l d e e s a e x a
w a c o n s e r v a t i o n i a r
a l e a c e i w n r a x g q h o v
p r o d u c e r s v k u j p a e e
p h o t o s y n t h e s i s b t s
t e t d g w g v i s e u q c i p t
r o o t s l j b e t k s s u t k i
u k o h l e a v e s r o r y a d n
n f o r e s t a o n a f o b t a g
k o c x n b p y s g b i y y s l p

Search for the 17 **BOLD** vocabulary words in the text.

Make it at Home

Nutty TREE

You will need:



6 green mini-marshmallows



1 ice cream cone



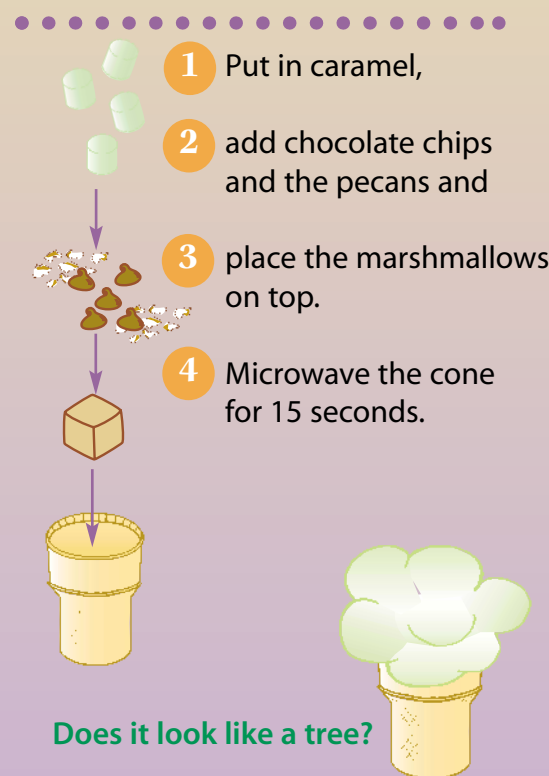
1 caramel candy



12 or so chocolate chips



a few pecan pieces



Does it look like a tree?

SHADY
WEB

- 1 Missouri Department of Conservation www.conservation.state.mo.us
- 2 The Pencil Pages! www.pencils.com
- 3 Paper University www.tappi.org/paperu
- 4 Smokey Bear's Web Page www.smokeybear.com



The FUN PAGE

Point of View

Students were asked if a dead tree should be cut or left standing for wildlife.

Let's see what they said:

"Dead trees should not be cut. They might have some creatures in them, maybe owls."

Tamar Lawson, Grade 3, Blue Ridge Elementary, Columbia



"Yes, dead trees should be cut. They (new trees) can have more time to grow back. And, when they are cut down, they can make paper."

Elizabeth Sotomayer, North County Christian School, St. Louis



Here's what our expert had to say:



"Should you cut a dead tree? It depends on where the tree is and how you want to use it. Dead trees are great for watching wildlife, especially woodpeckers, owls, squirrels and even bluebirds. If the tree is near a house or building, it

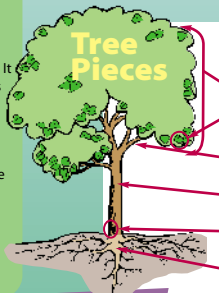
may be in danger of falling and need to be removed. Trees that have died recently can make good lumber or firewood."

Justine Gartner, Forestry Field Programs Supervisor, Department of Conservation



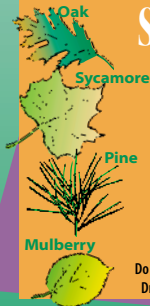
What's Wrong?

Circle 6 things that are wrong.



Can you name the parts of a tree?

Seed Match



Do you know the seeds to these trees?
Draw a line matching leaf and seed.



ROTTEN Riddles

How do you find a dogwood?
By its bark.

How did the elm learn about its family tree?
It looked at its roots.

What did the sapling eat at the fair?
Acorn dogs.



An Office in the FOREST

Here's what Forester Bruce Palmer has to say about his job helping Missouri forests.

What do foresters do?

"Foresters care for forests. We must balance the need for forest products with the need for wildlife habitat, recreation and soil conservation. Foresters also decide when to harvest trees, when to plant new trees and how to help forests grow better."

What does it mean to harvest a tree?

"Harvesting is cutting a tree that is ready to be used. The tree is made into lumber, paper, furniture or other wood products that we use each day."



Does it hurt the forest when you cut a tree?

"Careful harvesting can actually help a forest. Removing older trees that grow slowly makes room for younger, healthier trees. These younger trees are also homes for wildlife."

What happens after you harvest a forest?

"Trees are a renewable resource. Seedlings and sprouts from the stumps grow quickly in full sunlight. The branches from the cut tree are left in the woods to rot and make rich soil."

What can I do to help care for our forests?

"Visit nearby forests and learn more about them. To get involved, you can join the Missouri Forestkeepers Network. Forestkeepers help foresters by watching for forest problems, such as insects. To join, contact **Missouri Forestkeepers Network, 4207 Lindell Blvd., Suite 120, St. Louis MO 63108; 888-936-7378.**"



Did you know

Plants and animals

- About 99 percent of a tree's roots are in the top 3 feet of soil.
- Tiger salamanders may look like tigers, but they eat worms, spiders and slugs. Blech!
- Squirrels are great at storing nuts. But hey, a gray squirrel needs 100 pounds of food each year to survive!

History

- In 1900, the first Missouri foresters got together to help manage our forests.
- Today, there are more than 14 million acres of forests in Missouri.

Society and forest products

- In a year, we each use enough wood and paper to equal a 100-foot tree, 18 inches in diameter.
- And, 1.5 billion tree seedlings are planted in the U.S. each year—5 new trees for each citizen. Wow!
- We recycle more than 247 million pounds of paper a day. Keep up the great work!

GREAT FOREST HIKES

Painted Rock Conservation Area

See the Ozark landscape as you hike at Painted Rock Conservation Area. The trail winds along rocky bluffs and gives you a great view of the Osage River and forests below. Cool things to watch for are big oak trees, lizards, bloodroot wildflowers and bald eagles. Painted Rock is located south of Jefferson City.



Mingo National Wildlife Refuge

Visit Mingo National Wildlife Refuge to see Missouri swamp trees with knees. Deep in the swamp forests at Mingo you will find baldcypress trees and exciting wildlife—from wood ducks to river otters. Mingo is found near Poplar Bluff.



Bluffwoods Conservation Area

Tall forests once grew along the Missouri River and Bluffwoods Conservation Area is one of those forests. Hike the trails to see white-tailed deer, red fox and an amazing look at the "Big Muddy." Bluffwoods is near St. Joseph.

